

WHAT IS CLAIMED IS:

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1. A process for producing relaxin from a non-naturally occurring prorelaxin wherein said prorelaxin comprises a leader peptide, the B-chain, a non-naturally occurring C-chain, and the A-chain, and wherein said leader peptide comprises a cleavage site adjacent the B-chain and wherein said non-naturally occurring C-chain comprises cleavage sites adjacent the B-chain and the A-chain, ~~which method comprises removing the said leader and non-naturally occurring C-peptide from said prorelaxin using a cleaving agent at said cleavage sites and recovering relaxin.~~
2. The process of Claim 1 wherein the relaxin is H2 human relaxin.
3. The process of Claim 1 wherein said cleaving agent is one or more enzymes.
4. The process according to Claim 3 wherein said enzymes are selected from the group consisting of endoproteinase Asp N, trypsin, endoproteinase Lys C, endoproteinase Arg C and carboxypeptidase B.
5. The process according to Claim 4 wherein ~~said enzymes are trypsin or endoproteinase Arg C in combination with carboxypeptidase B.~~
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6. The process according to Claim 4 wherein said enzymes are Lys C in combination with carboxypeptidase B.
7. The process according to Claim 4 wherein said enzymes are Asp N in combination with Lys C.
8. The process according to Claim 1 wherein said prorelaxin is produced recombinantly by providing DNA encoding it within an operative expression vector

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transfected into host cells, culturing said transfected cells and isolating said prorelaxin.

9. The process according to Claim 8 wherein said isolation includes solubilizing and refolding said prorelaxin.

10. The process of Claim 9 wherein said prorelaxin is solubilized with a solution comprising guanidine hydrochloride.

11. The process of Claim 9 wherein said prorelaxin is refolded under conditions of dilute protein concentration.

12. The process of Claim 9 wherein prorelaxin is refolded using a redox buffer.

13. The process of Claim 8 wherein said host cells are E.coli.

14. The process of Claim 1 further comprising cyclizing the A-chain N-terminal glutamine.

15. The process of Claim 14 wherein the relaxin A-chain N-terminal glutamine is cyclized through a heat step.

16. The process according to Claim 1 wherein said non-naturally occurring C-peptide ^{comprises} ~~is comprised of~~ the amino acid sequence KRKPTGYGSRKKR.

17. The process according to Claim 1 wherein said non-naturally occurring C-peptide ^{comprises} ~~is comprised of~~ the amino acid sequence DKKRTGYGSRRRK.

18. The process according to Claim 1 wherein said non-naturally occurring C-peptide ^{comprises} ~~is comprised of~~ the amino acid sequence DKKRTGYGSRKKR.

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19. The process according to Claim 1 wherein said non-naturally occurring C-peptide ^{comprises} ~~is comprised~~ of the amino acid sequence KRKPTGYGSRRRK.

20. The process according to Claim 1 wherein said leader sequence ^{comprises} ~~is comprised~~ of the amino acid sequence MKKNIAFLLKR.

21. ~~The process according to Claim 1 wherein said relaxin is recovered by a process comprising use of adsorption chromatography, ion-exchange chromatography, reverse-phase chromatography, size-exclusion chromatography and/or ultrafiltration.~~

22. The process according to Claim 1 ~~optionally~~ comprising formulating the relaxin in formulation buffer.

23. A prorelaxin comprising a leader peptide, the B-chain, a non-naturally occurring C-chain, and the A-chain, wherein said leader peptide comprises a cleavage site adjacent the B-chain and wherein said non-naturally occurring C-chain comprises cleavage sites adjacent the B-chain and the A-chain.

24. The prorelaxin according to Claim 23 wherein said cleavage sites are enzymatically cleaveable.

25. The prorelaxin according to Claim 23 wherein said non-naturally occurring C-peptide ^{comprises} ~~is comprised~~ of the amino acid sequence KRKPTGYGSRKRR.

26. The prorelaxin according to Claim 23 wherein said non-naturally occurring C-peptide ^{comprises} ~~is comprised~~ of the amino acid sequence DKKRTGYGSRRRK.

27. The prorelaxin according to Claim 23 wherein said non-naturally occurring C-peptide ^{comprises} ~~is comprised~~ of the amino acid sequence DKKRTGYGSRKRR.

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28. The prorelaxin according to Claim 23 wherein said non-naturally occurring C-peptide ^{comprise} ~~is comprised of~~ the amino acid sequence KRKPTGYGSRRRK.

29. The prorelaxin according to Claim 23 wherein said leader sequence ^{comprise} ~~is comprised of~~ the amino acid sequence MKKNIAFLLKR.

30. An isolated DNA encoding the prorelaxin of Claim 23.

31. An expression vector operatively containing the DNA according to Claim 30.

32. A host cell transfected with the vector of claim 31.

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